

Investigation of Functional Properties – DAG vs. TAG in 35% oil-in-water Emulsions (48 hr results)

Emulsifier	Hydrophilic Lipophilic Balance (HLB)	DAG			TAG		
		0.50%	1.00%	1.50%	0.50%	1.00%	1.50%
Polysorbate 60	14.9	120	130	152	116	116	120
Polysorbate 80	15.0	120	126	140	120	120	120
Ethoxylated Monos	13.1	124	134	140	120	122	126
SSL (added to oil)	6.5	166	224	228	124	130	170
SSL (added to water)	6.5	126	126	128	130	127	130

Investigation of Functional Properties of DAG vs. TAG
High HLB Emulsifiers

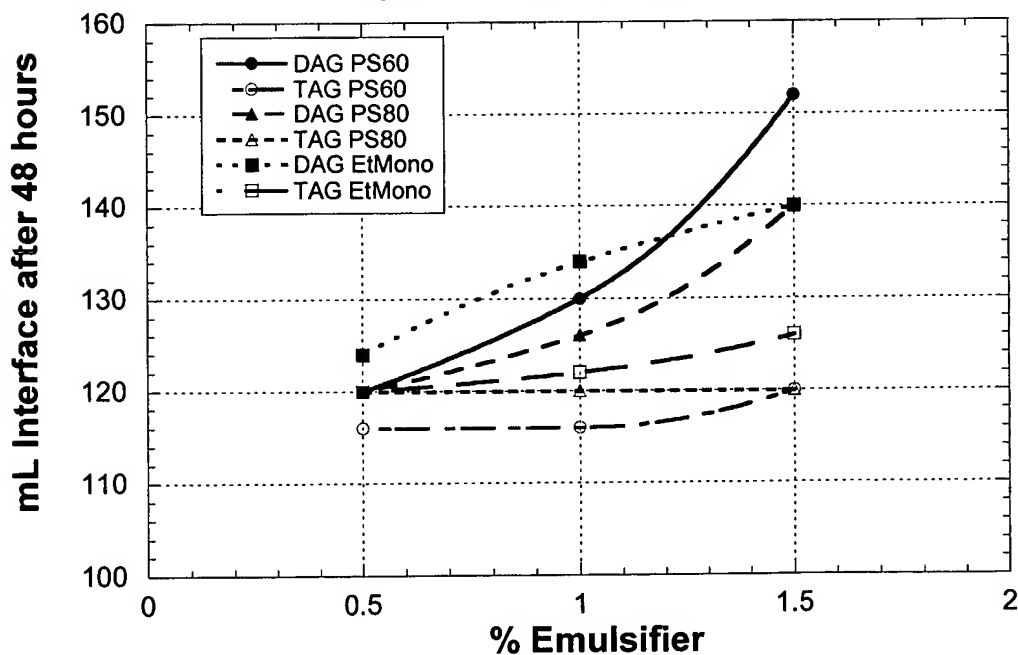


FIG. 1A

Investigation of Functional Properties of DAG vs. TAG SSL

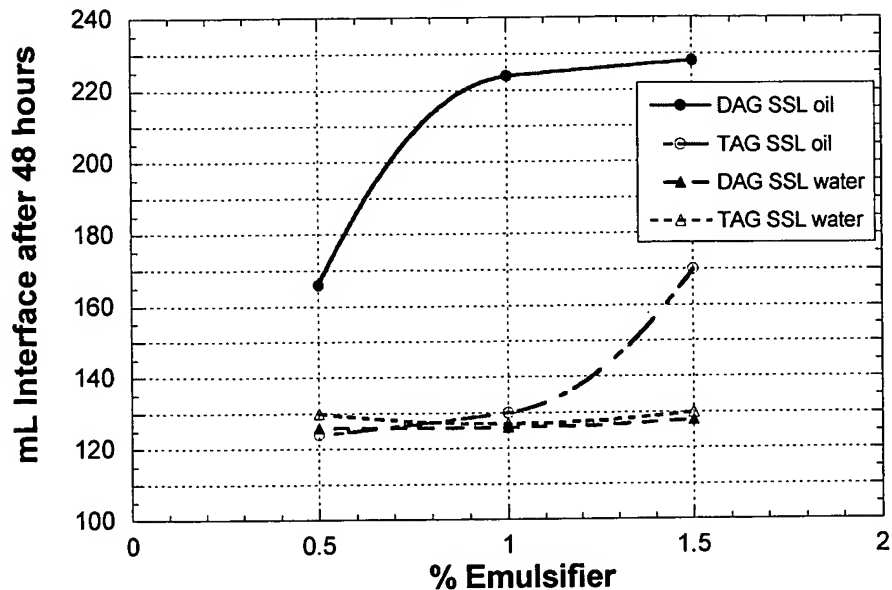


FIG. 1B

Investigation of Functional Properties of DAG High HLB Emulsifiers

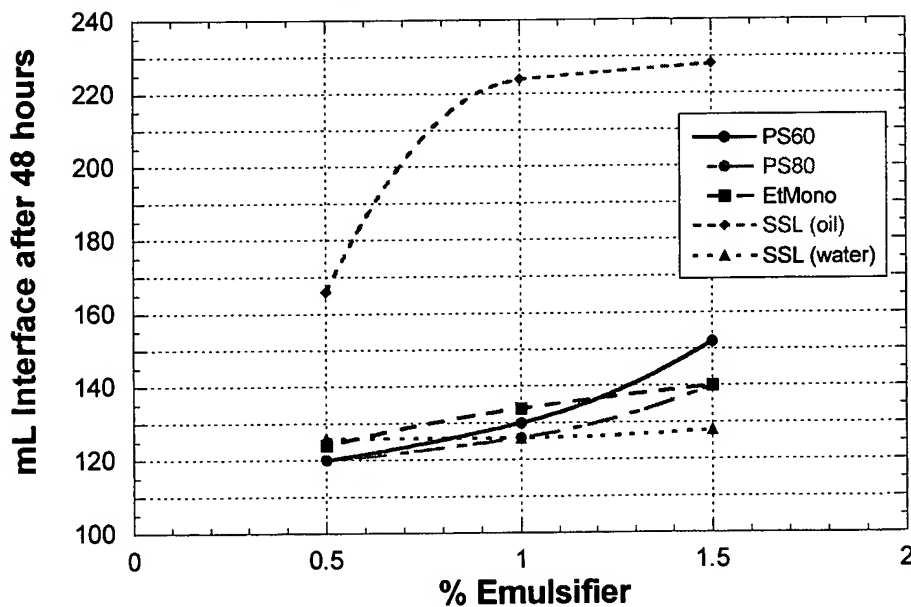


FIG. 1C

Investigation of Functional Properties of TAG High HLB Emulsifiers

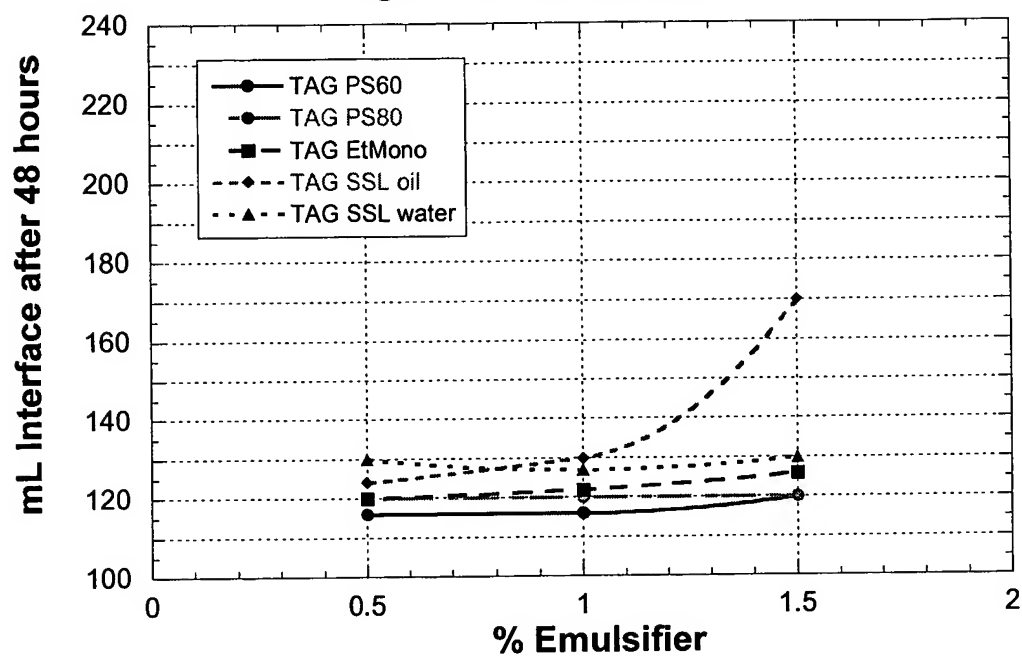


FIG. 1D

INVESTIGATION OF FUNCTIONAL PROPERTIES – DAG VS. TAG IN 35% OIL-IN-WATER EMULSIONS (48 HR RESULTS)

Emulsifier	Hydrophilic Lipophilic Balance (HLB)	DAG			TAG		
		0.50%	1.00%	1.50%	0.50%	1.00%	1.50%
Yelkin TS (standard lecithin)	4	118	122	122	70	35	30
Thermolec 200 (acetylated lecithin)	7	120	128	127	98	106	119
Blendmax K (lysolecithin)	8	138	129	135	100	112	118
Yelkin 1018 (hydroxylated lecithin)	9-10	92	86	80	109	115	117
Thermolec WFC (acetylated/ hydroxylated lecithin)	9-10	130	134	140	96	104	108
Performix E (complexed lecithin)	9-10	119	129	135	109	123	123

FIG. 2A

Investigation of Functional Properties of DAG Lecithins with Increasing HLB

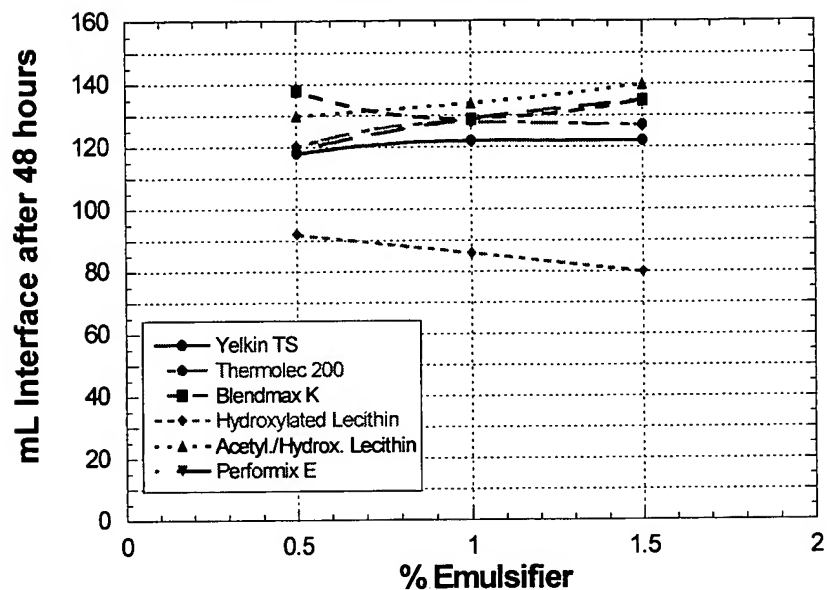


FIG. 2B

Investigation of Functional Properties of TAG Lecithins with Increasing HLB

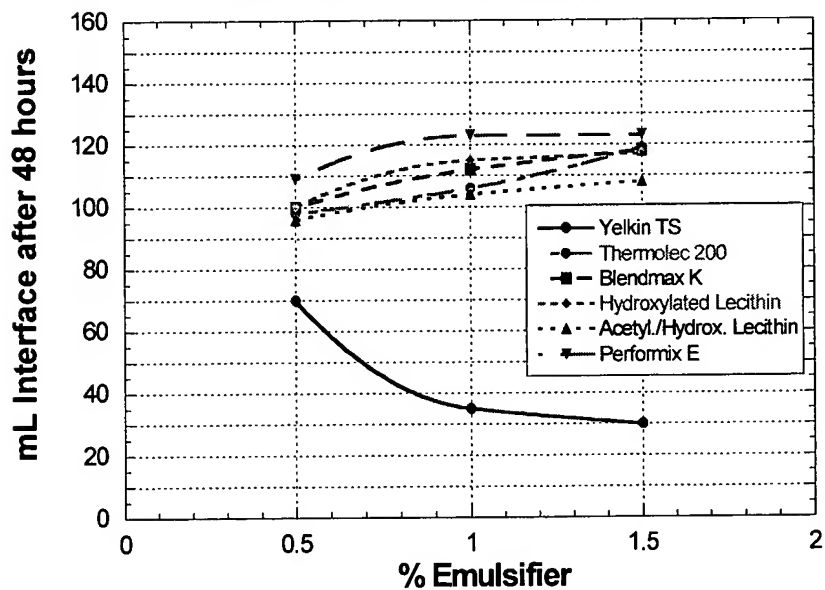


FIG. 2C

INVESTIGATION OF FUNCTIONAL PROPERTIES – DAG VS. TAG IN 35% OIL-IN-WATER EMULSIONS (48 HR RESULTS)

Emulsifier	DAG			TAG		
	0.50%	1.00%	1.50%	0.50%	1.00%	1.50%
SSL (oil phase)	116	224	228	124	130	170
CCB	138	158	198	120	182	220

Investigation of Functional Properties of DAG vs. TAG SSL and CCB

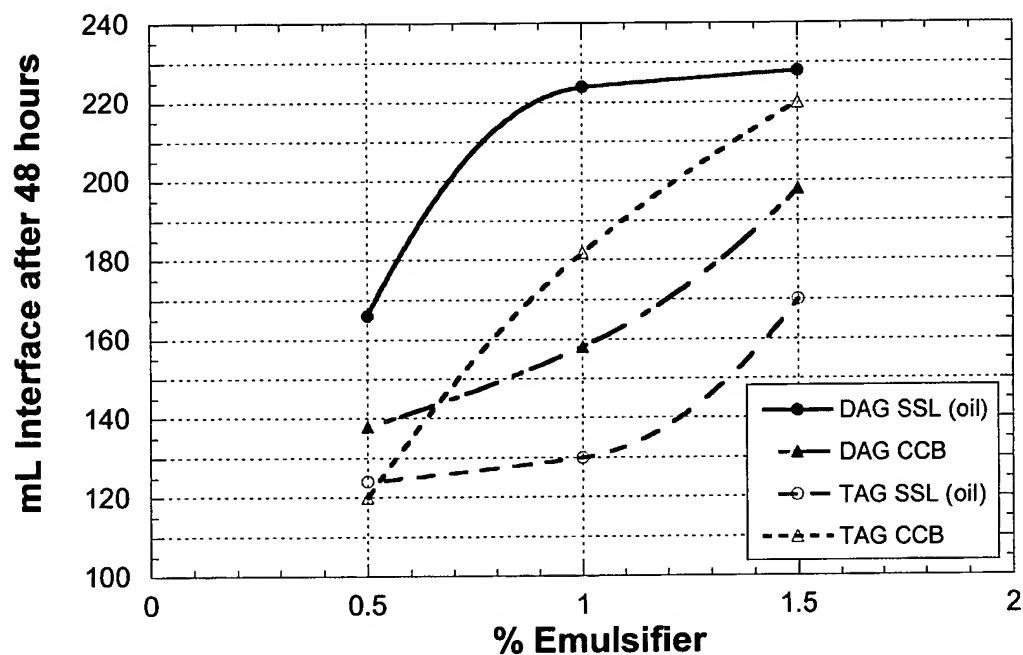


FIG. 3